

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-2 (Canceled).

Claim 3 (Currently Amended): A plasma processor, comprising:

a processing vessel having a holder holding a substrate to be processed;

a microwave antenna provided on the processing vessel so as to oppose the substrate to be processed;

a processing gas supply part provided between the substrate to be processed on the holder and the microwave antenna so as to oppose the substrate to be processed,

a lattice-like gas diffusion part including a vertical linear part and a horizontal linear part,

~~the process gas supply part including~~ a plurality of first openings through which plasma formed in the processing vessel passes, the first openings formed between the vertical linear part and the horizontal linear part of the gas diffusion part,

a process gas channel formed in the vertical linear part and the horizontal linear part of the gas diffusion part and connectable to a process gas source,

a plurality of second openings communicating with the process gas channel, and

a cooling medium channel through which a cooling medium cooling the process gas supply part flows, the cooling medium channel being formed in one of the vertical linear part and the horizontal linear part of the gas diffusion part so that the cooling medium flows only in the one of the vertical linear part and the horizontal linear part in the gas diffusion part; and

a cooling medium circulator connected to the cooling medium channel and configured to circulate the cooling medium,

wherein the cooling medium includes a cooling gas and mist of H₂O, and

a pressure of the cooling medium channel is 0.2 to 1 MPa.

Claim 4 (Previously Presented): The plasma processor as claimed in claim 3, wherein the cooling medium circulator has cooling means for cooling the cooling medium.

Claim 5 (Previously Presented): The plasma processor as claimed in claim 3, wherein the cooling medium circulator has cooling medium control means for controlling an amount of cooling of the process gas supply part by the cooling medium based on temperature measured by temperature measurement means provided in the process gas supply part.

Claim 6 (Previously Presented): The plasma processor as claimed in claim 5, wherein the cooling medium control means is flow rate control means for controlling flow rate of the cooling medium.

Claim 7 (Previously Presented): The plasma processor as claimed in claim 5, wherein the cooling medium control means is pressure control means for controlling pressure of the cooling medium between 0.2 and 1 MPa.

Claims 8-9 (Cancelled).

Claim 10 (Previously Presented): The plasma processor as claimed in claim 3, wherein the cooling medium includes SF₆.

Claims 11-13 (Cancelled).

Claim 14 (Currently Amended): The plasma processor as claimed in claim 3, wherein
the processing gas supply part is attached to the processing vessel through a heat
insulating part, and

the heat insulating part includes two components and the two components increase a
thermal resistance between the processing vessel and the process gas supply part.

Claim 15 (Previously Presented): The plasma processor as claimed in claim 3,
wherein the cooling medium circulator is configured to circulate the cooling medium to cool
the processing gas supply part so that the processing gas supply part is maintained at
approximately 100°C to 200°C.

Claim 16 (Cancelled).